## SPEC® CFP2006 Result

**Dell Inc.**

PowerEdge R940 (Intel Xeon Gold 6134, 3.20 GHz)

**SPECfp_rate2006 = 1860**

**SPECfp_rate_base2006 = 1800**

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**CPU2006 license:** 55

**Test sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test date:** May-2017

**Hardware Availability:** Jul-2017

**Software Availability:** Nov-2016

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### Software

**Operating System:** SUSE Linux Enterprise Server 12 SP2 4.4.21-69-default

**Compiler:**
- C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;
- Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux

**Auto Parallel:** Yes

**File System:** xfs

**System State:** Run level 3 (multi-user)

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### Hardware

**CPU Name:** Intel Xeon Gold 6134

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz

**CPU MHZ:** 3200

**FPU:** Integrated

**CPU(s) enabled:** 32 cores, 4 chips, 8 cores/chip, 2 threads/core

**CPU(s) orderable:** 2, 4 chip

**Primary Cache:** 32 KB I + 32 KB D on chip per core

**Secondary Cache:** 1 MB I+D on chip per core

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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECfp_rate2006</th>
<th>SPECfp_rate_base2006</th>
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<td>64</td>
<td>1160</td>
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</tr>
<tr>
<td>482.sphinx3</td>
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Results Table

<table>
<thead>
<tr>
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<th>Copies</th>
<th>Seconds</th>
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<tr>
<td>482.sphinx3</td>
<td>64</td>
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<td>1730</td>
<td>717</td>
<td>1740</td>
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</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS settings:
Sub NUMA Cluster enabled
Virtualization Technology disabled

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**Platform Notes (Continued)**

System Profile set to Custom  
CPU Performance set to Maximum Performance  
C States set to autonomous  
C1E disabled  
Uncore Frequency set to Dynamic  
Energy Efficiency Policy set to Performance  
Memory Patrol Scrub disabled  
Logical Processor enabled  
CPU Interconnect Bus Link Power Management disabled  
PCI ASPM L1 Link Power Management disabled  
Sysinfo program /home/cpu2006-1.2_ic17u3/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on linux-kj6v Tue May 23 16:01:48 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From `/proc/cpuinfo`  
- `model name`: Intel(R) Xeon(R) Gold 6134 CPU @ 3.20GHz  
- `cache size`: 25344 KB

From `/proc/meminfo`  
- `MemTotal`: 791001148 kB  
- `HugePages_Total`: 0  
- `Hugepagesize`: 2048 kB

`/usr/bin/lsb_release -d`  
SUSE Linux Enterprise Server 12 SP2

From `/etc/*release* /etc/*version*`  
- `NAME="SLES"`  
- `VERSION="12-SP2"`

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Platform Notes (Continued)

VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME=\"cpe:/o:suse:sles:12:sp2\"

uname -a:
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 23 07:59

SPEC is set to: /home/cpu2006-1.2_ic17u3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 796G 6.4G 789G 1% /home

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Dell Inc. 1.0.0 05/16/2017
Memory:
48x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006-1.2_ic17u3/lib/ia32:/home/cpu2006-1.2_ic17u3/lib/intel64:/home/cpu2006-1.2_ic17u3/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled by default
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

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Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -gopt-prefetch -auto-p32
-gopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -gopt-prefetch -auto-p32
-gopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -gopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX512 -ipo -O3 -no-prec-div -gopt-prefetch -auto-p32
-gopt-mem-layout-trans=3
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**Peak Compiler Invocation**

- C benchmarks: 
  - `icc -m64`
- C++ benchmarks: 
  - `icpc -m64`
- Fortran benchmarks: 
  - `ifort -m64`
- Benchmarks using both Fortran and C: 
  - `icc -m64 ifort -m64`

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**Peak Portability Flags**

Same as Base Portability Flags

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**Peak Optimization Flags**

- C benchmarks:
  - 433.milc: basepeak = yes
  - 470.lbm: basepeak = yes
  - 482.sphinx3: basepeak = yes
- C++ benchmarks:
  - 444.namd: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -fno-alias -auto-ilp32 -qopt-mem-layout-trans=3`
  - 447.dealII: basepeak = yes
  - 450.soplex: basepeak = yes
  - 453.povray: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -unroll4 -qopt-mem-layout-trans=3`
- Fortran benchmarks:
  - 410.bwaves: basepeak = yes

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<th>Peak Optimization Flags (Continued)</th>
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</thead>
</table>
| 416.gamess: | -prof-gen (pass 1) -prof-use (pass 2) -xCORE-AVX512 (pass 2) -par-num-threads=1 (pass 1) -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2) -unroll2 -inline-level=0 -scalar-rep- | 434.zeusmp: basepeak = yes  
437.leslie3d: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch  
459.GemsFDTD: basepeak = yes  
465.tonto: -prof-gen (pass 1) -prof-use (pass 2) -xCORE-AVX512 (pass 2) -par-num-threads=1 (pass 1) -ipo (pass 2) -O3 (pass 2) -no-prec-div (pass 2) -unroll4 -auto -inline-calloc -qopt-malloc-options=3  

**Benchmarks using both Fortran and C:**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
</table>
| 435.gromacs: | -prof-gen (pass 1) -prof-use (pass 2) -xCORE-AVX512 (pass 2) -par-num-threads=1 (pass 1) -qopt-prefetch -auto-ilp32 -qopt-mem-layout-trans=3  
436.cactusADM: basepeak = yes  
454.calculix: basepeak = yes  
481.wrf: basepeak = yes  

The flags files that were used to format this result can be browsed at:


You can also download the XML flags sources by saving the following links:


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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.  